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## SCIENTIFIC JOURNALS AND ARTICLES.

*The American Naturalist* for December completes the thirty-fifth volume of this journal and contains the index for the year. The first article, by T. H. Morgan, is a discussion of 'Regeneration in the Egg, Embryo and Adult,' including the use of the term 'polarity' in organic beings and inorganic substances. The writer considers that the reorganization of living beings is an entirely different phenomenon from that of inorganic substances and one of the peculiar properties of what we call living matter. C. M. Child tells of 'The Habits and Natural History of *Stichostemma*,' a small fresh-water nemertean, and W. M. Wheeler contributes another of his important papers on the history of ants under the title of 'An Extraordinary Ant-Guest,' this being a phorid larva which fastens itself to the neck of the larvæ of a large ponerine ant and feeds with its host on food prepared by the workers. Herbert W. Rand gives an extended abstract of 'Friedenthal's Experimental Proof of Blood Relationship'; this is found in the fact that the blood serum of vertebrates undeniably related to one another has no injurious effect on the corpuscles of the different species, while it dissolves those of unrelated species. Similarly the transfusion of blood of species of one family is harmless, while blood transfusion among species of different species is harmful and may cause death. The number contains the 'Quarterly Record of Gifts, Appointments, Resignations and Deaths'; Mr. Carnegie still continues prominent in the founding of libraries.

*The Popular Science Monthly* for January commences the sixtieth volume, and opens with a description of 'The Minnesota Sea-side Station' by Conway MacMillan. The station is on the Straits of Fuca in a favorable locality for varied research. The problems of 'Antarctic Exploration' are considered by J. W. Gregory who notes the objects of the four expeditions now on the sea, and Francis Galton discusses 'The Possible Improvement of the Human Breed under existing Conditions of Law and Sentiment,' concluding that

this is not only desirable but possible. Charles V. Chapin writes of 'The End of the Filth Theory of Disease,' but adds that we should not become too closely wedded to the germ theory which has replaced it. 'Recent Eclipses of the Sun' are described by Solon I. Bailey, Edward S. Holden contributes a sketch of 'Friar Roger Bacon,' and W. H. Dall briefly reviews 'Lamarck, the Founder of Evolution,' a biography by A. S. Packard. The final article is on 'Comet's Tails, the Corona and Aurora Borealis' by John Cox, being a detailed review of Arrhenius' theory concerning them.

*The Plant World* for November contains the 'Rooting of *Oxalis* Leaves' by John L. Shelton, 'The Blooming of Twining Honey-suckles' by Byron D. Halsted, 'Fairy Rings' by E. M. Williams, 'You Will Have to Hurry' by Aven Nelson, and 'Field Notes of a Mid-summer Tramp' by Charles C. Pitt. In 'The Families of Flowering Plants' Charles L. Pollard treats of the Order Parietales.

*Popular Astronomy* for January gives an account of observations on the recent Leonids, and an article by William H. Pickering upon the 'Period of Revolution of the Leonids.' R. G. Aitken, of the Lick Observatory, contributes an article entitled 'The Sources of Standard Time in the United States.' Shorter articles are 'An Asteroid Orbit of Great Eccentricity,' by E. C. Pickering; 'Eclipse Aid to Chronology,' by the Rev. Q. A. Wheat; 'The Period of Algol,' 'Transformation of the Differentials of Area and Volume,' by Asaph Hall; 'Motion in the Faint Nebula surrounding Nova Persei,' by C. D. Perrine, and a continuation of Dr. Wilson's 'Light Curve of the New Star in Perseus.'

BEGINNING with the new year *The Forester*, the official organ of the American Forestry Association and *National Irrigation*, the organ of the National Irrigation Association, will be combined and published under the name of *Forestry and Irrigation*.

DR. GEORGE B. SHATTUCK, of the Johns Hopkins University, has lately been elected on the Board of Collaborators of the *Annales de Géographie* to take the place of Professor Wm. M.

Davis, of Harvard University, who has recently resigned.

#### SOCIETIES AND ACADEMIES.

NEW YORK ACADEMY OF SCIENCES, SECTION OF ASTRONOMY, PHYSICS AND CHEMISTRY.

THE Section met at the Chemists' Club on the evening of December 2. The following papers were presented:

Professor M. I. Pupin described an experimental investigation of 'Energy-Dissipation' in a weak magnetic field. The substance experimented upon was a toroid of square cross-section made up of iron plates .010 in. thick. The magnetizing force was supplied by a helix uniformly distributed over the core. The force applied was simple harmonic of 1,800 periods per second, and its amplitude could be varied from 0 to .1 C.G.S. unit. The inductance and resistance of the helix was determined in a Wheatstone bridge. The results obtained were compared with theory. According to the theory worked out by the author, inductance ( $L$ ) and Foucault resistance ( $R$ ) is given by the formulæ:

$$L = 2s^2\mu h \log \frac{b}{a}$$

$$R = \frac{4}{3\sigma} \pi^2 \mu d^2 f^2 L$$

where

$s$  = number of turns in the helix.

$\mu$  = permeability of the iron.

$\sigma$  = specific resistance of the iron in C.G.S. units.

$f$  = frequency of the magnetizing force.

$h$  = height of the core in cm.

$d$  = thickness of the plates in cm.

$a$  = internal diameter of the plates.

$b$  = external diameter of the plates.

Up to about .05 C.G.S. units of the magnetizing force  $\mu$  is constant and equal to about 80 in the samples of iron employed; there is no hysteresis, and the theory agrees very well with experiment. Beyond that limit both  $L$  and  $R$  increase; the increase of  $R$  is very rapid on account of hysteresis.

When the core is magnetized by a steady force and then after removal of this force  $L$  and  $R$  are measured it is found that they both

change on account of the change of  $\mu$ . Their values still agree with the theory within the above limits of magnetization. Hence weak magnetizations are not accompanied by hysteresis, both when the iron is neutral and also when it is already, even strongly, magnetized.

An increase of the permanent magnetization diminishes  $\mu$ , and *vice versa*. The maximum change in  $\mu$  thus obtained was 22 per cent.

Professor J. K. Rees presented some notes and lantern illustrations on observations of Leonids made at Bayport by C. A. Post and himself. The observations were made at Mr. Post's observatory during the nights from November 13 to 16 (both inclusive).

For the purpose of photographing meteor trails four cameras were fastened to the equatorial. Exposures for known times were made on identified parts of the sky. The results showed meteor trails on the plates taken between midnight and sunrise of November 15. Quite a remarkable meteor was shown on plates taken with the Willard and the Anthony lenses. This meteor appeared at 3.58 a. m. near the radiant point and exhibited a fine head and trail, which remained visible for a minute or more. A lantern slide of this meteor (made by Mr. Post) was thrown on the screen, and attention was called to the peculiar details of the head and trail. Considering the number and the brilliancy of the meteors which fell during the morning of the 15th, the trails on the plates are unexpectedly few.

Only during the night of November 14-15 was a careful attempt made to count the meteors. Miss Edith Post and Miss Greenough watched the northeastern and the southeastern sky. The observers at the telescope occasionally aided in counting. Four hundred and eighteen meteors, of which all but a very few were well-defined Leonids, were counted. Of these the greatest number was seen between 4.30 and 5.55 a. m., November 15, when 273 were counted. During the last hour the shower was evidently increasing.

The notes on 'Individual Meteors' show that many bright Leonids fell, showing trails which lasted many seconds, and extended 10 to 30 degrees.